Thinking of others: effects of implicit and explicit media cues on climate of opinion perceptions

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Abstract: Media contain various cues to opinions of others and therefore serve as an important source of information about the climate of opinion. We distinguish explicit cues directly describing opinion distributions in society, from implicit cues lacking such a direct reference. In an experiment, we examined the relative impact of survey data (explicit cue) and arguments (implicit cue) on climate of opinion judgments. While survey results strongly affected assessments, argumentation had an effect only when no survey information was available. However, arguments produced an indirect effect, as they strongly affected personal opinions, which in turn influenced climate of opinion judgments (projection).

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Thinking of Others.

Effects of Implicit and Explicit Media Cues on Climate of Opinion Perceptions.

What do Americans think of Barack Obama? Do they oppose or favor the government's foreign policy? When asked to assess the way others think about certain people or issues, individuals can use various sources of information. They can, on the one hand, draw on external information by monitoring their personal social environment or mass media coverage. Opinions or behaviors observed this way, can serve as indicators of public opinion.[1] For instance, if friends, family, or acquaintances support America's foreign policy, an observer could generalize this attitude to people outside his direct environment.[2] The mass media, as a second external source present a wide range of indicators of prevalent opinions in society as well.[3] Media can convey explicit information on existing opinion distributions, e.g. opinion surveys, or rather implicit information, like arguments, individual opinions, or in form of general news slant. Following Noelle-Neumann, the mass media are important for public opinion judgments[4] especially when other information sources like first-hand experiences or interpersonal communication are not available.

Besides external, people are also guided by their own attitudes, which they can project onto their social environment. Well known perceptual phenomena such as the looking-glass- or the false-consensus effect, describe such social projections, and have been empirically confirmed in numerous studies.[5]

Up to now, studies examining the effects of media cues on the perception of public opinion are found in the fields of exemplification research[6], research on the persuasive press inference[7], hostile media effects[8], media skepticism[9], and selective exposure[10]. While exemplification studies focus predominantly on the effects of single case descriptions compared to those of base-rate information[11] persuasive press inference- and hostile media studies examine the influence of (perceived) media slant.[12] We extent this view by comparing the effects of arguments within a

newspaper report as implicit cues to public opinion with poll information as an explicit cue. Following Noelle-Neumann's spiral of silence theory, we also distinguish between effects on current and future climate of opinion perceptions[13] in order to examine possible differences regarding the relative importance of implicit and explicit media cues.

1. Theoretical Considerations

Implicit and Explicit Cues to the Climate of Opinion

Media coverage provides recipients with a broad range of potential information about the climate of opinion. Besides opinion polls—as probably the most prominent example[14]—there are also more subtle cues to public opinion, e.g. the depiction of individual behaviors and opinions (exemplars)[15] or the general slant of news.[16]

Researchers have been aware of this particular function of mass media for quite a while[17] and have examined media content relevant to climate of opinion judgments.[18] According to the directness media content refers to public opinion we can distinguish explicit from implicit cues.

Explicit cues refer to content that directly describes prevailing opinion distributions or proportions in society. Journalists present these direct descriptions e.g. in form of poll data and depict them in charts, tables, or report them in written form (e.g. "62 Percent of U.S. citizens appreciate the government's foreign policy").[19] Representations of poll data in the media have increased significantly in the last few decades and have become a salient feature of coverage, especially prior to elections.[20]

Implicit cues on the other hand do not provide a direct reference to the climate of opinion. Thus, recipients themselves must establish this cognitive link. For instance, if individuals or groups of people declare their support for, or opposition to a certain position (e.g. "We oppose U.S. interventions in the Middle East"), or show respective behaviors (e.g. by attending demon-

strations), recipients could generalize this observation.[21] Furthermore, general news slant[22] as well as the frequency and distribution of issues[23] or political candidates[24] can convey impressions of opinion distributions in society.

Cognitive Processing of Implicit and Explicit Cues to the Climate of Opinion

The differentiation between implicit and explicit cues derives from theoretical considerations regarding the way they are cognitively processed. When recipients receive explicit information on the climate of opinion (e.g. "73 percent of the U.S. population welcomes the abandonment of nuclear energy") they possibly remember and retrieve it when they assess public opinion.[25] In this case, judgments should result from learning processes. In contrast, assessments based on implicit indicators derive from cognitive heuristics that allow judgment-formation even if direct information about the climate of opinion is not available.

Cognitive processing of explicit cues. When people form judgments, they often draw on information that is available and easily accessible in their memory. The accessibility of information increases the more recently or frequently it has been perceived.[26] Moreover, memory content matching the object of evaluation, or being relevant to the judgment in question, becomes more important (applicability). This also applies to statistical information: the more a person believes that statistical information suits a following judgment, the more the evaluation will depend on this information.[27] In addition, studies analyzing the effects of survey results showed, that for the most part people are able to adequately recall prevailing majority ratios,[28] and that this information exerts a strong influence on public opinion assessment.[29]

Therefore we assume that judgments regarding the climate of opinion are based on poll information that is (1.) readily available and (2.) matching the judgment in question.

H1: Surveys, as explicit media cues, influence recipients' judgments of the climate of opinion in the direction of the survey results.

Cognitive processing of implicit cues. Since the climate of opinion cannot be inferred directly from implicit media cues, people must engage in alternative cognitive processes. The "persuasive press inference" (PPI) described by Gunther explains how individuals assess public opinion on the basis of media coverage.[30] Gunther—in line with third-person effect research[31] and the more general "influence of presumed media influence" approach[32]—assumes that recipients believe in strong media effects on other people. Consequently, they also think that media content exerts a persuasive effect, induced by the slant of coverage. Furthermore, the PPI assumes that recipients believe that the media reach a broad audience and provide them with more or less similar content. Based on these assumptions, recipients generalize the presumed effect of tendentious media coverage and infer corresponding opinion distributions from it.[33] However, there is also an alternative explanation for the relationship between news slant and public opinion perception that Gunther mentions in his pioneer study and which he calls "reflection". The idea is that instead of expecting media to shape public opinion recipients might simply see it as it's mirror. Nevertheless, the PPI and the reflection-hypothesis predict a positive effect of article slant on public opinion perception although the cognitive processes they rely on differ.[34] This leads us to H2:

H2: If arguments in a media report support (oppose) a certain opinion, the perceived public agreement to this opinion increases (decreases).

Persuasive Effects of Implicit and Explicit Media Cues

Media cues to public opinion can not only exert an influence on climate of opinion perceptions but also on personal opinions and even behavior. Two fields of research have contributed to the understanding of the persuasive effects of publicized polls:

The first field emerged as an early reaction to the publication of election polls and it focusses on the consequences for voting behavior, with rather mixed results.[35] Sometimes bandwagon effects are observed, meaning that voters tend to take the side of the supposed winner.[36] In other cases people tend support the candidate lagging behind (underdog effect).[37] Studies trying to specify the conditions under which the two effects occur found that underdog effects are more likely when the candidate lagging behind in the polls is displayed as disadvantaged and underprivileged. Voters then tend to support this candidate because they feel sympathy or pity.[38] However, a recent meta-analysis shows that bandwagon effects occur slightly more often than underdog effects[39] especially if additional information on candidates is scarce, e.g. in the case of issue-centered elections or referenda.[40] How can this tendency be explained theoretically? Mutz assumes that the reception of survey data leads to an activation of existing cognitions and recipients start reflecting why other people may hold certain (majority) opinions. Memory content activated this way can in turn influence one's personal opinion (self-persuasion). The probability that cognitions are in accordance with the presented majority opinion (bandwagon), increases if a person does not hold a strong opinion or lacks information about the situation. In this case, he or she tends to fall in line with the majority view.[41]

The second approach explaining persuasive poll effects originates in social psychology and is known as social proof.[42] Social proof means that in certain situations people tend to align their attitudes and behavior to the majority because they want to make correct decisions. Very similar to the studies of poll effects, social proof is found to be most prevalent in low information settings, when the situation is uncertain, unfamiliar[43] or when individuals perceive similarities

between themselves and others.[44] On the other hand, tendencies to conform to the majority are less pronounced when judgments or decisions are important and difficult at the same time.[45] We therefore assume that in new and unknown situations people tend to be persuaded by majority opinions depicted by polls.

H3a: If survey information on an unknown issue is presented recipients tend to follow the majority opinion.

Besides social cues like polls, other message characteristics are also known to influence personal opinions and attitudes. Especially rational persuasive appeals can change the way people think about certain issues. Based on the elaboration-likelihood model[46] two independent meta-analyses by Allen (1991) and O'Keefe (1999) have shown that (one and two-sided) messages have substantial persuasive effects on recipients opinions.[47] Also, a greater number of arguments pointing in a certain direction increases the likelihood that a person will change his or her opinion accordingly.[48] In line with this research we reach the following assumption regarding the persuasive effect of arguments:

H3b: If arguments on an unknown issue are presented the recipient's opinion will follow the slant of the arguments.

Personal Opinion and Climate of Opinion Assessment

Besides implicit and explicit information as external cues, people are also guided by their own opinions when assessing public opinion. In many cases, one can observe a strong relationship between attitudes and the perceived majority opinion, an effect known as social projection.[49] Projection can be a result of social selection processes, since people tend to select their social surroundings according to their own attitudes. In this way, social experiences characterized by

agreement with other people are more frequent, and therefore cognitively more available, if judgments on the climate of opinion are formed. A second explanation refers to a strong focus on one's own opinion during judgment formation, which is more likely to occur if a person holds an extreme opinion. Due to high personal involvement, the individual concentrates so heavily on his own attitude that other opinions are underestimated or ignored. A further, motivational explanation considers the cause of the correlation to lie in the positive effects resulting from a consensus between the individual and his social environment (e.g. social approval, self-enhancement). To date, there is still little clarity regarding the causes of projection effects.[50] Nevertheless, the previous remarks suggest that personal opinions have a substantial influence on the perceived climate of opinions, which leads us to the following hypothesis:

H4: The more positive one's personal opinion on an issue, the more positively he or she will assess the climate of opinion with respect to the issue.

Perceptions of the Current and Future Climate of Opinion

A frequently encountered distinction in public opinion research is that between current and future climate of opinion perceptions. The differentiation was first introduced by Noelle-Neumann in the spiral of silence theory[51] and was subsequently adopted by other researchers.[52] Whereas the current climate of opinion refers to impressions of present opinion distributions, respectively perceptions of actual majorities or minorities in society, the future climate of opinion describes expectations how public opinion will develop over time.[53] Noelle-Neumann assumes that differences between the two judgments indicate a process of change in public opinion and that it is the future expectation which determines individual behavior strongest.[54]

Therefore, most studies focus on the effects of current and future public opinion perceptions on attitudes or behavior[55] but do not analyze differences in the formation of the two judg-

ments.[56] An exception is a qualitative study by Shamir and Shamir examining whether peoples' assessments of the current and future state of opinion are based on the same information.[57] The authors conclude that "people must use very different information arrays in estimating current opinion distributions and future opinion trends. In forming estimates of the current distribution of opinion, people will indeed rely mainly on social cues. However, their expectations of the future distribution of opinions will reflect a much wider informational array, consistent with a more rational prospective outlook. When perceptions and expectations diverge, it is because they are affected differently by these two distinct information arrays. Such divergence allows us to assess these two sources of public opinion and their role in public opinion dynamics."[58]

By analyzing think aloud protocols Shamir and Shamir reveal some important aspects: Estimates of the future climate of opinion were rather based on what they call "substantive information about current policy decisions, events, conditions, and developments."[59] It means that if asked about future developments of public opinion participants often referred to current conditions or events and considered their effects on the future opinion of others. They also found that personal opinion was a relevant cue regarding both judgments (social projection), but was more pronounced when people estimated the future state of public opinion. Poll information however was barely mentioned as a cue at all but was slightly more important in forming current public opinion judgments.[60]

Following Shamir and Shamir's qualitative work, we also expect differences regarding the importance of specific cues to current and future public opinion perceptions:

H5a: Survey results as a social cue to public opinion will exert a stronger influence on judgments about the current state of public opinion than on judgments about its future state.

H5b: Arguments as substantive information will exert a stronger influence on judgments about the future state of public opinion than on judgments about its current state.

H5c: Social projection will be more pronounced for judgments regarding the future climate of opinion than for those of the current climate of opinion.

Relationships Between Media Cues and Perceived Climate of Opinion

The relationships between media cues, individual opinion, and climate-of-opinion perceptions presented so far are closely linked to one another, and can therefore be integrated theoretically. The model shown in Figure 1 is an attempt to describe how judgments on the climate of opinion are formed. We assume two effects of poll information presented in a news report: On the one hand, it will trigger people to align their opinion to the majority opinion indicated by the poll (H3a). On the other hand, recipients immediately learn about the current opinion distribution and use this information when assessing the climate of opinion (H1).

Arguments contained in the media as implicit cues, also initiate two cognitive processes. Firstly, they exert a persuasive effect on personal opinions (H3b), and secondly, recipients infer the climate of opinion from the slant of the arguments presented (H2). In addition, the model takes into account that people project their personal opinions onto the social environment (H4). Thereby, indirect effects of media cues are also possible, because survey information or arguments might initially influence one's personal opinion, which in turn shapes climate-of-opinion judgments.

Figure 1

2. Method

Study Design and Stimulus

To test our hypotheses, we conducted an online experiment in which a (fictional) newspaper report on the extension of an express railway in a suburb of Cologne in Germany served as a stimulus. The topic seemed appropriate for two reasons: Firstly, it allowed us to present and manipulate arguments in favor of and against the extension (implicit cue) as well as survey results (explicit cue) within the article. Secondly, because of its regional character we did not expect the issue being associated with strong attitudes, prior knowledge, or high thematic involvement, since these factors might shape judgments as well.[61] After participants read the newspaper article they answered various questions concerning our central constructs as well as socio-demographic characteristics.

The experiment was based on a 3x4 design with "tendency of survey results" and "slant of argumentation" serving as experimental factors. Survey results, as an explicit cue to public opinion, varied on three levels: The article contained a survey showing either a clear (26% in support, 74% opposed), or a narrow (48% in support, 52% opposed) opposition of Cologne's citizens to the railway extension. Participants in the control condition received no survey information. Survey results were presented in the text and as a chart which was titled: „Cologne's citizens' opinion of the railway extension", and showed two bars indicating the proportion of Citizens in favor of and against the extension, including percentages.

As an implicit cue, the article contained arguments that were directly related to the line extension.[62] We varied the slant of argumentation on four levels: It was either in favor of (two positive arguments: easing of heavy traffic, positive effect on the environment) or against (two negative arguments: relocation of inhabitants, costs for the city) the extension. In addition, we set up one condition with an ambivalent argumentation that contained both positive and negative arguments listed above. A final version of the article contained no arguments.

Sample and Participant Selection

Participants were recruited in April 2012 via a noncommercial online access panel and asked to take part in a survey on direct democracy, in order to conceal the actual purpose of the study. A simple randomizing mechanism determined assignment to one of the twelve experimental conditions. For the analysis, we excluded those who spend less than 40 seconds reading the stimulus, since this was identified as the minimum time required to read the text completely. Also, individuals living in Cologne or nearby were removed from the sample. The remaining 1.351 participants were almost equally distributed among the experimental groups. There were no significant differences between groups regarding education ($\chi^2(55) = 37.95$, $p = .96$), gender ($\chi^2(11) = 9.71$, $p = .56$), or age ($F(11, 696) = 1.18$; $p = .29$).

Measures

Assessment of the current climate of opinion. We measured participants' perceptions of the current climate of opinion using two items ("At the moment, the majority of Cologne's citizens are against the extension" [CC 1] and "Right now Cologne's citizens do not want an extension of the express line" [CC 2]). Participants could report their agreement on a five-point Likert scale ranging from 1 (I don't agree at all) to 5 (I totally agree). Both items made up a scale with satisfactory reliability (Spearman-Brown = .70, $M = 3.75$, $SD = 1.21$).

Assessment of the future climate of opinion. Participants were asked to estimate the result of an upcoming referendum on the railway extension. Again, two items were used (five-point Likert scale) ("The referendum will probably result in a rejection of the railway extension." [FC 1], "The citizens of Cologne will probably turn down the planned extension in October." [FC 2]), which subsequently formed a scale (Spearman-Brown = .89, $M = 3.52$, $SD = 1.03$).

Personal opinion. Participants were presented two items to express their own opinion on the railway extension: “I support the line extension” [PO 1] and “In my opinion the railway extension makes no sense” [PO 2] (five-grade Likert scale). The scale constructed on this basis again showed good reliability (Spearman-Brown = .93, $M = 3.50$, $SD = 1.28$).

3. Results

Before we move on to the examination of the relationships depicted by our theoretical model, we will first examine the relative influence of the experimental factors. To this end, we have conducted a two-way ANOVA with poll results and slant of argumentation as independent variables and the current and future opinion climate assessments as dependent variables (Figure 2).

Regarding the current climate of opinion, it becomes apparent that the poll results have a strong and significant main effect ($F(2, 692) = 213.42$, $p < .001$, $\eta^2 = .38$): People aligned their assessment of the current climate of opinion closely to the respective poll results. If the article presented a clear majority against the railway extension, participants also assumed a large opposition against the project. Accordingly, judgments were more moderate when the survey indicated only a marginal lead for the opposition. The slant of argumentation was found to have a main effect too, but it turned out to be much weaker ($F(3, 692) = 5.12$, $p < .01$, $\eta^2 = .02$), and did not follow a clear pattern. This is also apparent regarding the rather small differences in means between the argumentation groups (Figure 2).

Things change considerably if we turn to the estimated future climate of opinion. Although participants also conform their judgments to the survey results ($F(2, 615) = 112.56$, $p < .001$, $\eta^2 = .27$), the effect of arguments increases somewhat ($F(3, 615) = 14.21$, $p < .001$, $\eta^2 = .07$). It is interesting to see that arguments especially have an effect in cases of uncertainty that is

to say if survey results are ambiguous or completely missing. In this case, climate of opinion assessments noticeably follow argumentation slant: arguments against extension lead to the impression that the railway-project will lose public support, whereas arguments in favor have the opposite effect. People who were shown ambivalent or no arguments tend towards the middle of the scale. This interaction effect proves to be statistically significant ($F(6, 615) = 3.32$, $p < .01$, $\eta^2 = .03$) and becomes apparent when the pro and contra groups are compared within the condition of no survey information. While members of the pro group tend to predict public support in the future ($M = 2.31$, $SD = .93$), the contra group tends to believe that the extension will be rejected ($M = 3.45$, $SD = .93$).

Figure 2

We will now turn to the more complex relationships depicted by our theoretical model (Figure 1) and include participants' personal opinions in the analysis by using a linear structural equation model (SEM). Structural equation modeling has two important advantages: Firstly, latent variables can be integrated into the analysis, which usually yield a higher reliability than single manifest indicators. Secondly, the strengths of indirect relationships between the variables, in addition to direct relationships, can be quantified and tested statistically.[63] Survey results were integrated into the SEM as a dummy variable (0 = slight lead for extension opponents, 1 = clear lead for extension opponents). The slant of argumentation was coded as an ordinal variable (-1 = argumentation against extension, 0 = ambivalent argumentation, +1 = argumentation in favor of extension).[64]

Figure 3 shows the results for assessments of the current opinion climate as the dependent variable. The model shows a good fit[65] ($\chi^2 = 1.258$, $df = 5$, $p = .94$; SRMR = .007; RMSEA =

.000; CFI = 1.00) and two effects of the experimental treatments can be observed: Firstly, the survey results considerably influenced assessments of the current opinion climate (β = -.51, p < .001). People who saw an article picturing a large majority against the railway extension estimated the current proportion of opponents to be higher than participants who received information about a small lead of opponents. Secondly, argumentation had a significant effect: Participants based their own opinion on the railway extension predominantly on the arguments they found in the text (β = .42, p < .001). Arguments against led to rejection of the project, and conversely, positively connoted arguments led to an increase of acceptance.

Survey information had a much weaker, but yet significant effect on participants' personal opinions (β = -.10, p < .05). When a large majority opposing the extension was presented opinions also tended slightly in this direction. Contrary to our expectations we found no effect of argumentation on the perceived climate of opinion (β = -.10, p = .06). Consequently, hypotheses H1, H3a and H3b are confirmed, whereas H2 is not. Finally, we assumed a projection of personal opinion on others (H4), which is also confirmed: the more a person supported the railway extension, the less public opposition against the project he or she suspected (β = .16, p < .05).

At first glance, argumentation slant seems to have a rather weak effect on climate of opinion perceptions. Yet, following the model, arguments do not only exert a direct influence, but also work indirectly through projection. If, for instance, a person forms an opinion on the line extension on the basis of a news article, and subsequently projects his or her opinion on the citizens of Cologne, this is an indirect effect worth considering. Multiplying the coefficients along the respective model path[66] results in a mild, indirect effect of argumentation (β_{ind} = .07, p < .05). In contrast, when it comes to survey information, no indirect effect on the perceived climate of opinion occurs (β_{ind} = -.02, p = .13).

Figure 3

The relationships described above can analogously be examined to explain assessments of the future climate of opinion. Again, the model corresponds well to the empirical data ($\chi^2 = 5.329$, $df = 5$, $p = .38$; SRMR = .012; RMSEA = .01; CFI = 1.00). Compared to the first model, the fundamental directions of effects remain mostly the same, and thus conform to the hypotheses. Additionally, the strength of several relationships changes only slightly, if at all: The survey still exerts a weak effect on participants' personal opinions ($\beta = -.10$, $p < .05$), just as argumentation remains inconsequential for assessing the future opinion climate ($\beta = -.05$, $p = .33$). Nevertheless, it still influenced participants to personally agree or disagree with the railway project, as strongly as in the first model ($\beta = .42$, $p < .001$). However, there were several interesting and statistically significant[67] changes: On the one hand, the effect of survey results on evaluations of the climate of opinion weakened ($\beta = -.34$, $p < .001$). Although participants still based their forecasts to a great deal on the available survey information, they did so to a considerably lesser degree than in case of judgments on the current climate of opinion. In contrast, the importance of personal opinion increased: Participants now had a more pronounced tendency to project their own opinion onto others ($\beta = .33$, $p < .001$), which consequently also reinforced the aforementioned indirect effect of argumentation slant ($\beta_{ind} = .14$, $p < .001$). Therefore, H5a and H5c are also corroborated. However, we did not find significant effects of argumentation slant – neither on current nor on future public opinion perception and therefore had to reject H5b.

Figure 4

4. Discussion

Our findings indicate a strong, direct effect of survey information on individual perceptions of the current and future climate of opinion, since they provide a direct cue to existing opinion distributions and are therefore easily applicable to judgments. In addition, we showed that the representation of survey data also influences personal opinions, although this effect turned out to be considerably weaker. Our findings confirm the results of previous studies, which also revealed dominant effects of survey data on public opinion perceptions compared to those on individual opinions.[68]

Arguments strongly shape recipients' individual opinions, which is in accordance with our initial suppositions. However, contrary to our expectations, had no direct effect on the perception of public opinion. Nevertheless this should not lead to an underestimation of their influence: Firstly, they have a relatively strong indirect effect on climate-of-opinion perceptions, which is conveyed through social projection – a finding confirmed by other studies as well.[69] Secondly, the ANOVA shows that arguments influence climate of opinion judgments when survey information is absent or ambivalent which should be quite common in everyday coverage. The possibility of substituting specific cues to public opinion by others which are currently available is also mentioned by Shamir and Shamir who found that people made less use of their own opinion as a cue to public opinion when e.g. media cues were available.[70]

We suggest two possible explanations for this hierarchy of effects: On the one hand, it supports our assumption that survey information fits judgments on the climate of opinion quite well (high applicability). People simply judge survey data to be a more adequate indicator of public opinion than article slant. On the other hand, ambivalent or absent information could increase recipients' uncertainty regarding their assessment of the climate of opinion resulting in the use of additional information. Both assumptions should be further investigated also because media re-

ports usually offer different cues influencing perceptions of public opinion. Both, researchers and media professionals should be aware of their inter-dependencies.

However, the findings presented here should be interpreted with caution for numerous reasons: Firstly, the topic we selected as a stimulus (railway extension in Cologne) represents a rather special judgment situation which, according to Fleitas can be considered a minimal information election.[71] The term refers to situations in which individuals form judgments or make decisions based on limited prior knowledge, unstable attitudes, and a lack of information. As a result, their assessments derive primarily from the information available, which consequently has a strong effect. This certainly explains the strong persuasive influence of the arguments presented in the text, but also that of survey information on individual opinions. The latter result is also confirmed by previous studies on the effects of survey coverage.[72] The uncertain character and the small amount of information within our experimental setting also correspond to the social proof interpretation as the mechanism underlying survey effects on personal opinion.[73] Secondly, by choosing a geographically distant and unknown issue we intentionally tried to avoid an influence of preexisting attitudes and issue involvement. Although we increased internal validity this way both variables still represent important moderators of poll effects. Mutz e.g. shows that under moderate involvement conditions (compared to the high involvement condition) consensus information leads to an intensified issue related cognitive responses and attitude change.[74] Similarly, Hardmeier in her extensive literature review states that that poll effects seem to be more pronounced when people are less involved and have weak predispositions.[75]

The prominent placement of the survey information within the article (text and chart) is also a special feature of our study and most likely increased the importance of poll information for recipients' judgments.[76] Current studies on the effects of exemplars indicate stronger effects associated with graphically represented statistical descriptions of reality.[77] Furthermore the high

salience of survey information could also account for differences between the current study and a similar experiment conducted by Gunther and Christen. Contrary to our results, they find a dominant influence of news slant on climate of opinion evaluations. However, their operationalization of public opinion information differs from ours, since majority ratios were mentioned rather shortly in the text without percentages (e.g. “most Americans”, “very few Americans”). But we certainly agree with the authors who state that: “Actual public opinion information can arguably be highlighted to such an extent that it will make a difference in peoples’ social and personal judgments”. [78]

Finally, the relationship between personal opinion and perceived climate of opinion that we interpreted as projection can also be read in the opposite direction. Thus, participants could have first formed a certain impression of existing opinion distributions, to which they subsequently adopt their own opinion. With regard to the second interpretation, Deutsch and Gerard[79] define two categories of majority influence. Normative influence occurs because the individual expects sanctions when it does not conform to the group. Such an explanation would reflect theoretical ideas also included in the spiral of silence.[80] Informational influence, as the second category, is motivated by a desire for accuracy and therefore very similar to the social proof interpretation we discussed above.

We believe that in our experimental setting the fear of isolation was rather low, due to the vast social and geographic distance of the reported situation. Hence, it seems unlikely that recipients show conformity reactions caused by normative influence. On the other hand, informational influence might have been at work: Due to their lack of prior knowledge, participants could have tended to consider the majority opinion to be an indicator of validity. In this case, they would have based their opinion on the following consideration: If so many citizens in Cologne oppose the project, then they must have a point. Assuming that this explanation is correct, the influence

of the climate of opinion on one's own opinion should weaken or at least remain stable when participants have no information about the opinions of Cologne's inhabitants. However, additional analyses do not support this assumption. We calculated correlations between participants' personal opinion and their perceptions of the current / future public opinion for each of the experimental condition separately. The relationship was weaker in the case of clear (current climate: $r = -.05$, $p > .05$; future climate: $r = -.16$, $p < .01$) and narrow poll results (current climate: $r = -.08$, $p > .05$; future climate: $r = -.30$, $p < .001$) than in the condition without any poll information (current climate: $r = -.29$, $p > .001$; future climate: $r = -.46$, $p < .001$). While the same pattern holds for the present and future climate, the correlations are generally stronger in the latter case. These findings may indicate that public opinion assessments and personal opinions co-vary more strongly if polls are lacking. In order to further support the projection interpretation it is also important to note that our stimulus reported the arguments against or in favor of the express railway before poll information was brought up. This of course, did not fully assure that recipients first formed an opinion and then projected it onto public opinion, but it can be seen as an additional argument supporting our initial assumption. This interpretation is also supported by empirical studies showing that the influence of others' opinions decreases considerably when individuals had the chance to form an opinion in advance.[81]

Another central finding of the present experiment is that the slant of media coverage does not affect perceptions of the (current and future) climate of opinion. Participants, hence, neither assume that the report will influence the opinions of others (persuasive press inference) nor that it reflects public opinion (reflection). Additionally, if judgments would follow a persuasive press inference one would expect a correlation between the slant of argumentation and perceived *future* climate of opinion since the report should at least affect people's opinions after some time has passed. Perhaps participants did not consider the news report to be persuasive enough, which

would hinder a persuasive press inference or they did not perceive the article as a reflection of the current situation, but rather as single opinion of a journalist.

Our findings offer numerous possibilities for future studies. Firstly, one could draw more attention to the relative importance of implicit and explicit cues to public opinion in news reports. Although some studies have already considered some forms of media content, such as surveys[82] or exemplars[83], these do not permit an integrative or comparative analysis of these indicators. Additionally, as the comparison with the study by Gunther and Christen has shown, the effect of different media content can shift due to minor changes in coverage or presentation[84], which therefore should be examined as well. In this context, field studies could shed light to the question to what extent cumulation and consonance of certain content cues exert an influence on opinions and the perceived climate of opinion. Furthermore, longitudinal studies could answer the question whether, and under what conditions, either conformity to the perceived climate of opinion or social projection occurs.

Notes

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[1] W. P. Davison, "The public opinion process," *Public Opinion Quarterly* 22, (summer 1958):91-106; Robert R. Huckfeldt and John Sprague, *Citizens, politics and social communication: Information and influence in an election campaign* (Cambridge: Cambridge University Press, 1995); Elisabeth Noelle-Neumann, "The spiral of silence. A theory of public opinion," *Journal of Communication* 24, (summer 1974): 43-51; Hubert J. O'Gorman, "Pluralistic ignorance and white estimates of white support for racial segregation," *Public Opinion Quarterly* 39 (fall 1975):313-330; Magdalena Wojcieszak and Vincent Price, "What underlies the false consensus effect? How

personal opinion and disagreement affect perception of public opinion," *International Journal of Public Opinion Research* 21 (spring 2009): 25-46.

[2] Whether such an inference is valid may be questionable, since the personal social environment tends to be a rather limited and homogenous sample. See Diana C. Mutz, *Hearing the other side: Deliberative versus participatory democracy* (New York: Cambridge University Press, 2006), 46–8.

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[56] This does not mean that there are no studies analyzing the formation process of climate of opinion judgments. In fact, the vast body of research on exemplification, the persuasive press inference, hostile media perceptions or poll effects has contributed a lot to our understanding of their origins. However, most of these studies only examine the derivation of current public opinion estimates or lack comparisons between the factors influencing current and future judgments.

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[59] ibid., 125.

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[61] Fields and Schuman, "Public beliefs about the beliefs of the public,"

[62] For this reason, the theoretical part of this study does not deal with the representativeness heuristic, which is put forward to explain the effects of exemplars. See Amos Tversky and Daniel Kahneman, "Judgment under uncertainty: Heuristics and biases. Biases in judgments reveal some heuristics of thinking under uncertainty," *Science* 185 (September 27, 1974): 1124–1131. They are omitted here since the arguments in the text do not originate from identifiable individuals, whose behavior or opinions could be generalized to a broader demographic category.

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[64] In order to test the hypotheses above, we had to exclude two experimental conditions from the analysis: Participants who were not given any survey information, and participants to whom we did not present any arguments. Thus, the SEM tests for effects of survey- and argumentation, and not for the effect of missing information. This way we also ruled out the interaction effect between survey results and slant of argumentation, which showed up in the ANOVA in case of missing survey information, which would have complicated the interpretation of results.

[65] Data analysis using structural equation models requires multiple normally distributed variables (Randall E. Schumacker and Richard G. Lomax, *A Beginners Guide to Structural Equation Modeling*, 2nd ed. (Mahwah, London: Lawrence Erlbaum Associates, 2004), 11.). If this condition is violated, as in the case of this study, test of statistical significance should be conducted using a bootstrap procedure, which provides considerably more reliable confidence intervals. All samples in the following calculations are based on 10.000 bootstrap samples. See Bradley Elfron, "Bootstrap methods. Another look at the jackknife," *The Annals of Statistics* 7 (spring 1979): 1–26; Bradley Elfron, "Better bootstrap confidence intervals," *Journal of the American Statistical Association* 82 (March 1987): 171–185; Barbara Byrne, *Structural equation modeling with AMOS. Basic concepts, applications and programming* (Mahwah, London: Lawrence Erlbaum Associates, 2001), 267–86; Yiu-Fai Yung and Peter M. Bentler, "Bootstrapping techniques in analysis of mean and covariance structures.," in *Advanced structural equation modeling. Issues and techniques*, ed. George A. Marcoulides and Randall E. Schumacker (Mahwah: Lawrence Erlbaum Associates, 2003), 195–226.

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potential distortions. See Cheung and Lau, "Testing mediation and suppression effects of latent variables: Bootstrapping with structural equation models," Holbert and Stephenson, "The importance of indirect effects in media effects research," David P. MacKinnon, Chondra M. Lockwood, and Jason Williams, "Confidence limits for the indirect effect: Distribution of the product and resampling methods," *Multivariate Behavioral Research* 39 (January 2004): 99–128.

[67] Significant differences between the path coefficients of the current and future model are specified by two indicators. The first is the size of their standard errors which are relatively small (SE = .04 to .05). The second indicator is the Chi²-Difference-Test proposed which compares Chi²-values of two nested models, in which the path coefficients of model 2 are separately fixed to their values in model 1. Both indicators point to statistical differences for two pairs of path coefficients: the effect of survey results on climate of opinion perception (χ^2diff (1, N=527) = 226.002, $p < .001$) and the projection effect (χ^2diff (1, N=527) = 65.577, $p < .001$).

[68] Mutz and Soss, "Reading public opinion: The influence of news coverage on perceptions of public sentiment," Sonck and Loosveldt, "Impact of poll results on personal opinions and perceptions of collective opinion,"

[69] Gunther and Christen, "Effects of news slant and base rate information on perceived public opinion,"

[70] Shamir and Shamir, *The anatomy of public opinion*, 31–4.

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Appendix

Table 1

Bivariate Correlations Between the Variables in Model 1

	1	2	3	4
1. Tendency of poll results	–			
2. Slant of argumentation	.00	–		
3. Personal opinion	-.11**	.37***	–	
4. Current climate of opinion	.40***	.02	.14***	–

Note. ***p < .001; **p < .01; *p < .05

Table 2

Bivariate Correlations Between the Variables in Model 2

	1	2	3	4
1. Tendency of poll results	–			
2. Slant of argumentation	.00	–		
3. Personal opinion	-.11**	.37***	–	
4. Future climate of opinion	.39	-.15***	.30***	–

Note. ***p < .001; **p < .01; *p < .05

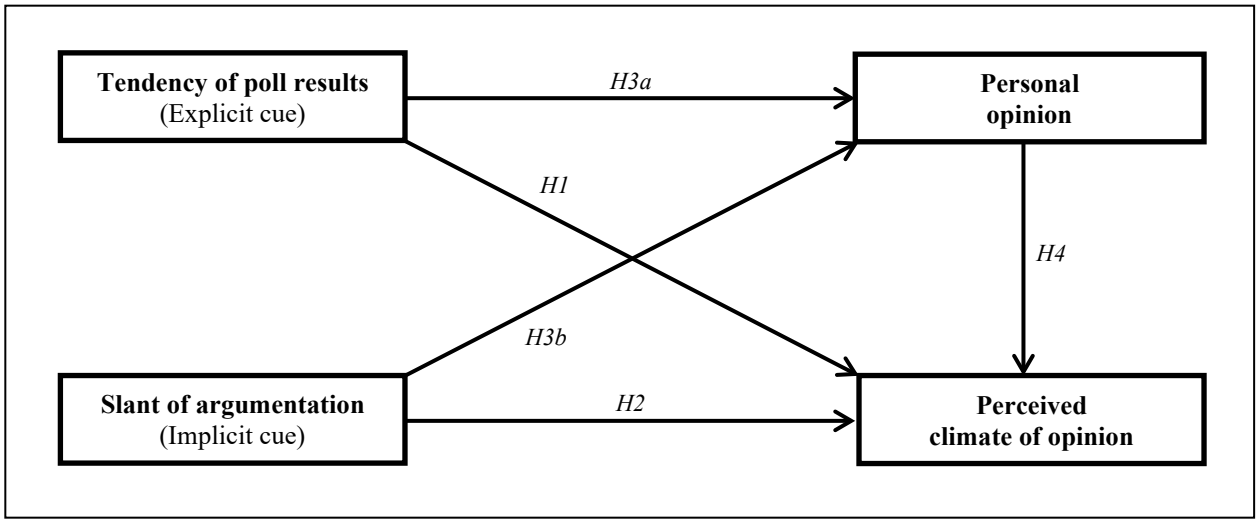

Figure 1. Effects of Implicit and Explicit Cues on Climate of Opinion Perceptions

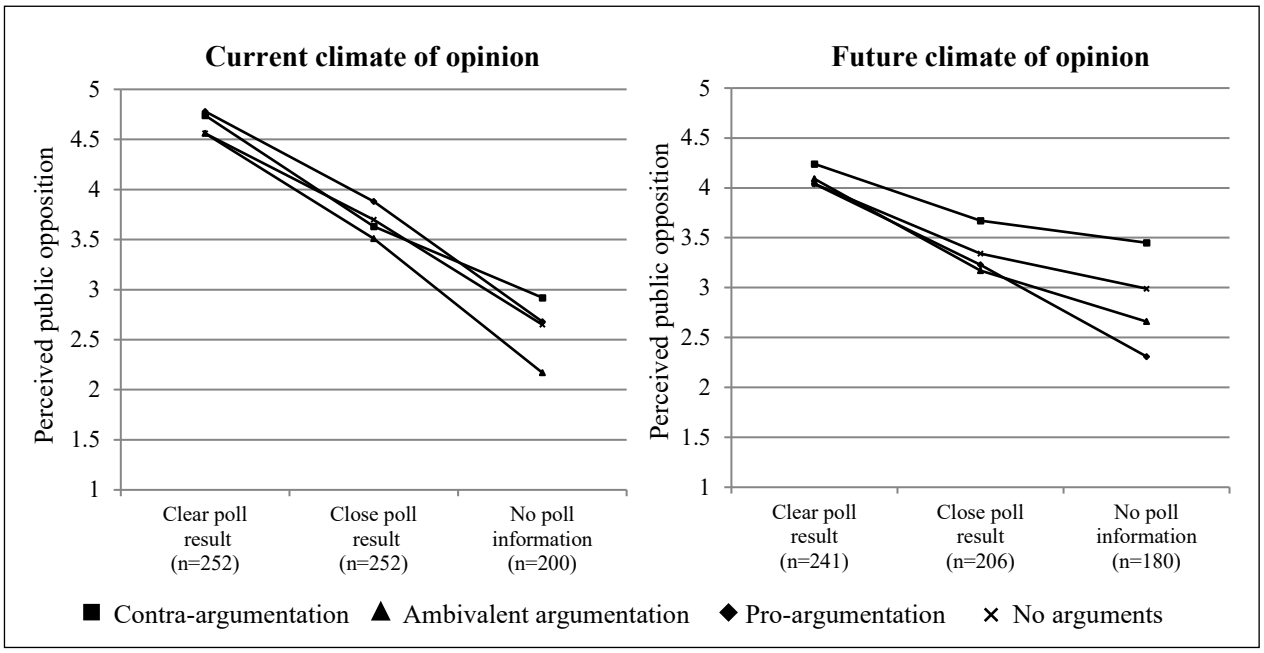

Figure 2. Effects of Survey and Argumentation on Assessments of the Current and Future Climate of Opinion

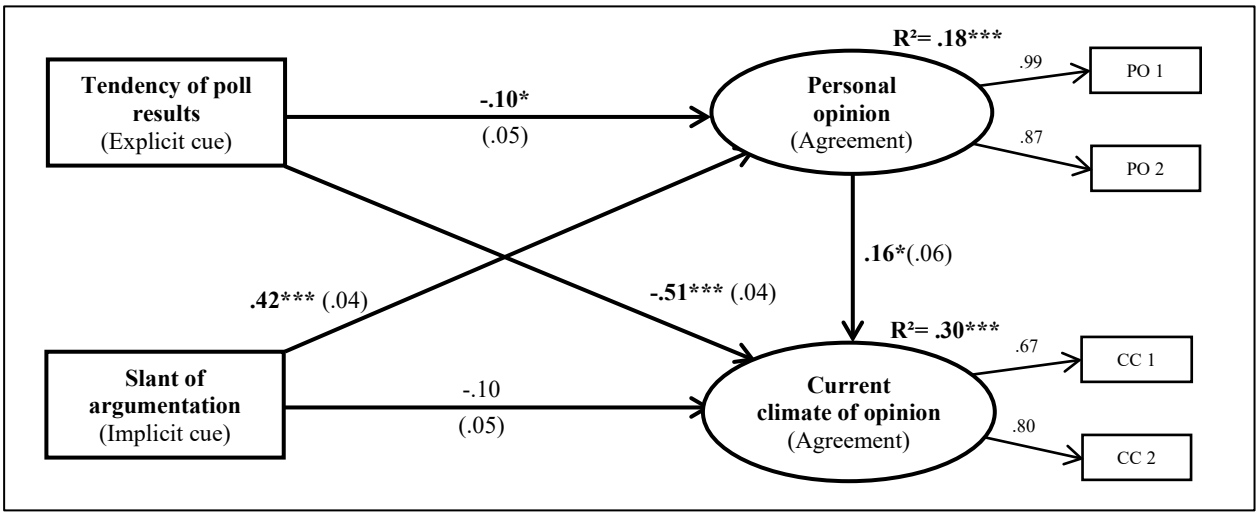

Figure 3. Effects of Implicit and Explicit Cues on the Perceived Current Climate of Opinion

Note. Standardized path coefficients (*β)*: *** $p < .001$; ** $p < .01$; * $p < .05$;

Model fit: $\chi^2 = 1.258$, $df = 5$, $p = .939$; SRMR = .007; RMSEA = .000; CFI = 1.000; $n = 564$.

All significance tests were calculated using bootstrapping (10.000 samples). To facilitate the interpretation of the path coefficients, the scales of the indicators of the constructs “current climate of opinion” were reversed. This also applies to the negatively formulated indicator of the construct “personal opinion”.

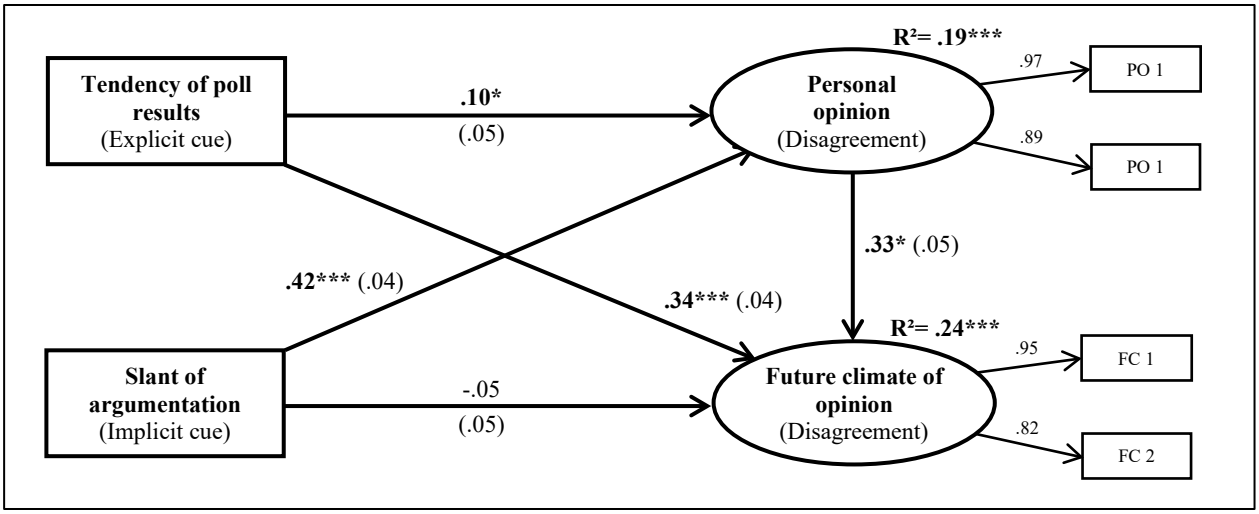

Figure 4. Effects of Implicit and Explicit Cues on the Perceived Future Climate of Opinion

Note. Standardized path coefficients (*β)*: *** $p < .001$; ** $p < .01$; * $p < .05$;

Model fit: $\chi^2 = 5.329$, $df = 5$, $p = .377$; SRMR = .012; RMSEA = .0011; CFI = 1.000; $n = 527$.

All significance tests were calculated using bootstrapping (10.000 samples). To facilitate the interpretation of the path coefficients, the scales of the indicators of the constructs “future climate of opinion” were reversed. This also applies to the negatively formulated indicator of the construct “personal opinion”.